

GLOBAL CLOSED LOOP CONTROL SYSTEM WITH DV/DT  
CONTROL AND EMI/SWITCHING LOSS REDUCTION

ABSTRACT OF THE DISCLOSURE

A motor drive system control provides global closed loop feedback to cooperatively operate system components to adaptively reduce noise and provide noise cancellation feedback. An active EMI filter reduces differential and common mode noise on an input and provides a noise level indication to a system controller. Power switches in both a power converter and power inverter are cooperatively controlled with dynamic dv/dt control to reduce switching noise according to a profile specified by the controller. The dv/dt control is provided as an analog signal to a high voltage IC and codified as a pulse width for a level shifting circuit supplying control signals to the high voltage gate drive. A noise extraction circuit and technique obtain fast noise sampling to permit noise cancellation and adaptive noise reduction.